

High Performance 256x8 PROM TiW PROM Family

53/63S280
53/63S281
53/63S281A

Features/Benefits

- 28-ns maximum access time
- Reliable titanium-tungsten fuses (TiW) guarantee greater than 98% programming yields
- Low-voltage generic programming
- PNP inputs for low input current
- Open collector or three-state outputs

Applications

- Microprogram control store
- Microprocessor program store
- Look-up table
- Character generator
- Code converter
- Programmable Logic Element (PLE™) with 8 inputs, 8 outputs, and 256 product terms

Description

The 53/63S280 and 53/63S281/A are 256x8 bipolar PROMs featuring low input current PNP inputs, full Schottky clamping, and open collector or three-state outputs. The titanium-tungsten fuses store a logical low and are programmed to the high state. Special on-chip circuitry and extra fuses provide preprogramming testing which assures high programming yields and high reliability.

The 63 series is specified for operation over the commercial temperature and voltage range. The 53 series is specified for the military ranges.

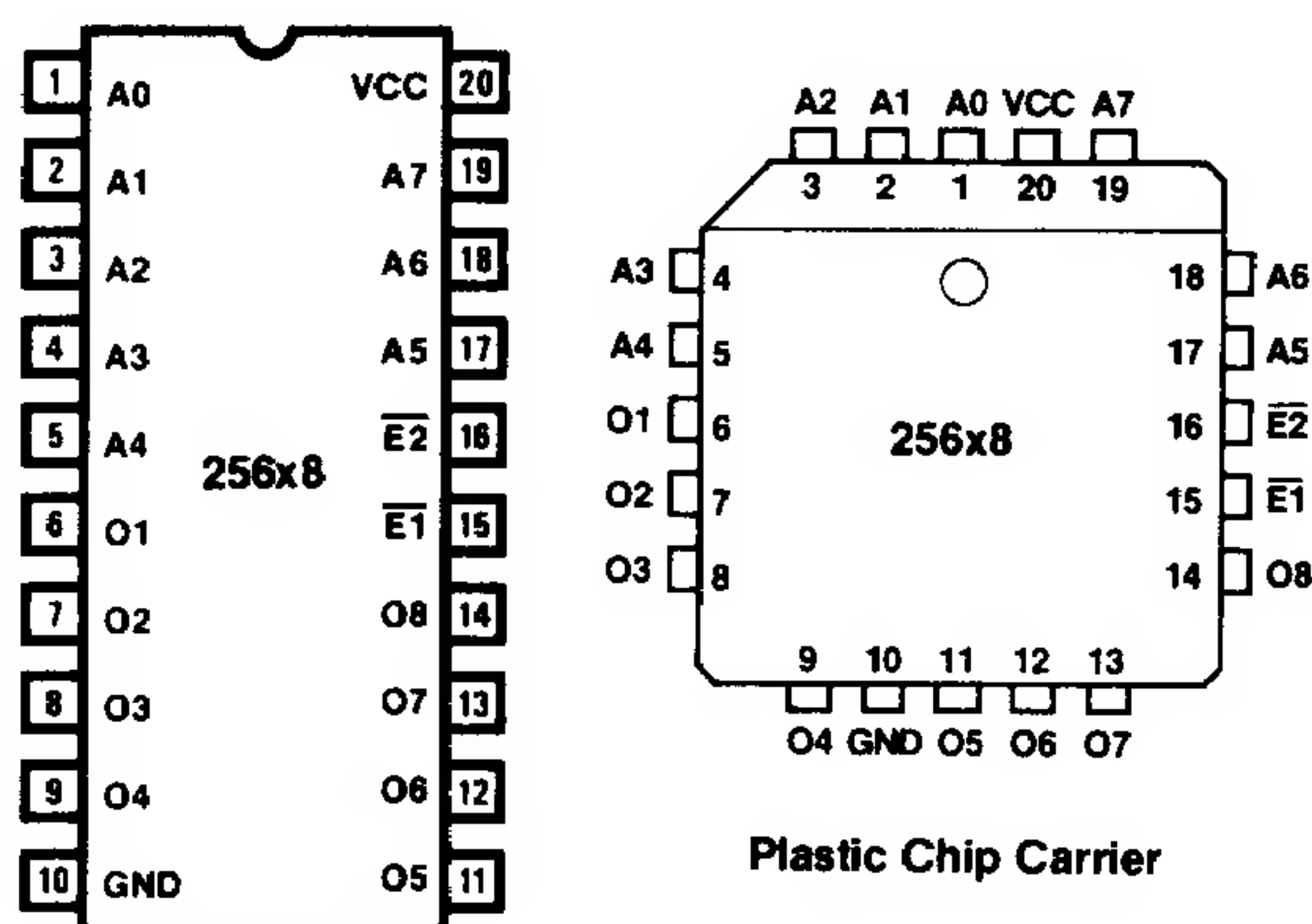
Programming

The 53/63S280 and 53/63S281/A PROMs are programmed with the same programming algorithm as all other Monolithic Memories' generic TiW PROMs. For details contact the factory.

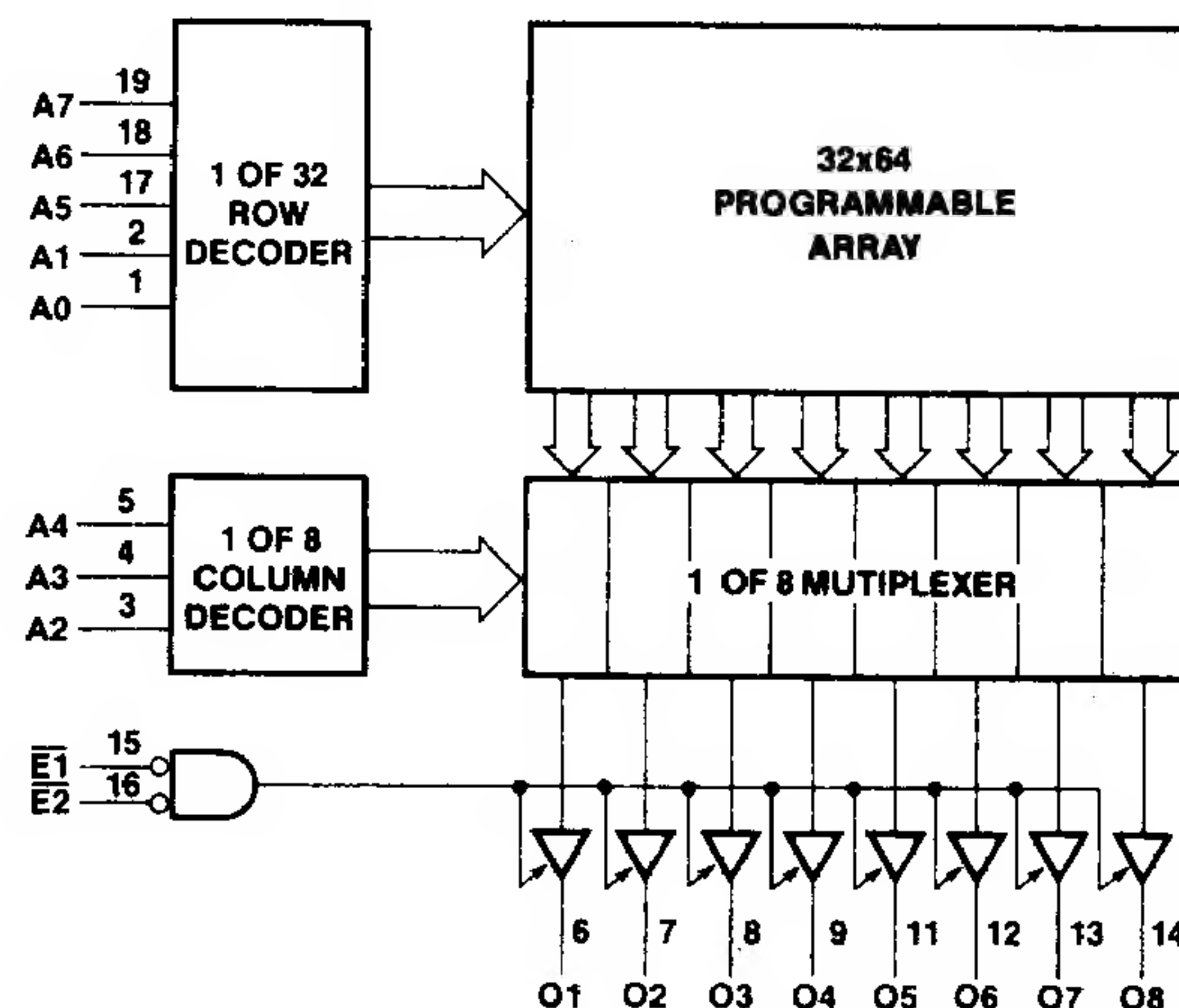
Selection Guide

MEMORY			PACKAGE		PERFORMANCE	PART NUMBER	
SIZE	ORGANIZATION	OUTPUT	PINS	TYPE		0°C to +75°C	-55°C to +125°C
2 K	256x8	TS	20	N,J,W NL,L	Enhanced	63S281A	53S281A
		TS			Standard	63S281	53S281
		OC				63S280	53S288

Pin Configurations



Block Diagram



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Absolute Maximum Ratings

	Operating	Programming
Supply voltage V_{CC}	-0.5 V to 7 V	12 V
Input voltage	-1.5 V to 7 V	7 V
Input current	-30 mA to +5 mA	
Off-state output voltage	-0.5 V to 5.5 V	12 V
Storage temperature	-65° to +150°C	

Operating Conditions

SYMBOL	PARAMETER	MILITARY			COMMERCIAL			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V_{CC}	Supply voltage	4.5	5	5.5	4.75	5	5.25	V
T_A	Operating free-air temperature	-55		125	0		75	°C

DC Electrical Characteristics Over Operating Conditions

SYMBOL	PARAMETER	TEST CONDITION		MIN	TYP†	MAX	UNIT
V_{IL}	Low-level input voltage					0.8	V
V_{IH}	High-level input voltage			2			V
V_{IC}	Input clamp voltage	$V_{CC} = \text{MIN}$	$I_I = -18 \text{ mA}$			-1.5	V
I_{IL}	Low-level input current	$V_{CC} = \text{MAX}$	$V_I = 0.4 \text{ V}$			-0.25	mA
I_{IH}	High-level input current	$V_{CC} = \text{MAX}$	$V_I = V_{CC} \text{ MAX}$			40	μA
V_{OL}	Low-level output voltage	$V_{CC} = \text{MIN}$	$I_{OL} = 16 \text{ mA}$		Com	0.45	V
					Mil	0.5	
V_{OH}	High-level output voltage*	$V_{CC} = \text{MIN}$	Com $I_{OH} = -3.2 \text{ mA}$	2.4			V
			Mil $I_{OH} = -2 \text{ mA}$				
I_{OZL}	Off-state output current*	$V_{CC} = \text{MAX}$	$V_O = 0.4 \text{ V}$			-40	μA
I_{OZH}			$V_O = 2.4 \text{ V}$			40	
I_{CEX}	Open collector output current	$V_{CC} = \text{MAX}$	$V_O = 2.4 \text{ V}$			40	μA
			$V_O = 5.5 \text{ V}$			100	
I_{OS}	Output short-circuit current**	$V_{CC} = 5 \text{ V}$	$V_O = 0 \text{ V}$	-20		-90	mA
I_{CC}	Supply current	$V_{CC} = \text{MAX}$. All inputs grounded. All outputs open.			90	140	mA

Switching Characteristics Over Operating Conditions (See standard test load)

OPERATING CONDITIONS	DEVICE TYPE	t_{AA} (ns) ADDRESS ACCESS TIME		t_{EA} AND t_{ER} (ns) ENABLE ACCESS TIME RECOVERY TIME		UNIT
		TYP†	MAX	TYP†	MAX	
COMMERCIAL	63S281A	21	28	18	25	ns
	63S280, 63S281	21	45	18	25	
MILITARY	53S281A	21	40	18	30	
	53S280, 53S281	21	50	18	30	

* Three-state only. ** Not more than one output should be shorted at a time and duration of the short-circuit should not exceed one second.

† Typicals at 5.0 V V_{CC} and 25°C T_A .